

A MCGRAW-HILL PUBLICATION

OCTOBER 1960

TWO DOLLARS

POWER

the magazine of energy systems engineering

Industrial Plant Design.....

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Central Station Design.....

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Plant and Design Aids Roundup.....

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PLANT DESIGN ISSUE

PLAINTIFF'S EXHIBIT

WH-1056

Industrial Plant Design Survey

Design features listed on the following pages are from newly completed or modernized industrial plants, from some still under construction, others yet on the drawing board. The term *industrial plant*, as used here, includes commercial and government buildings, hotels; in brief, sizeable non-central-station installations. Survey covers three significant energy-systems areas: *electrical distribution, steam generation, air conditioning.*

The electrical-distribution report is the third of its kind to appear in print; the first appeared in *POWER*, Oct 1958. It includes electrical detail right from the incoming main or primary sub through circuitry to lighting and motor loads. For the second year running, the three pages of air-conditioning tables list important features found in typical modern installations.

But because of the way we must compile facts the survey has its limits. We started the job by listing installations planned or on order. Then we sent questionnaires to individuals closely allied with each project asking for details. Replies went into the tables. So, by the very nature of things, you can see that these tabulations can't be complete. But they're representative of current design and construction, so you get timely information on trends.

Once again these are not complete lists, but extensive samples. Don't use the survey to get total values or where incompleteness may distort results.

1960 design survey: typical industrial

Note that each listing covers four pages. Project number helps you track a specific installation after turning facing page.

[illegible]

a) institutional power plants over 100 psi

[illegible]

continued

40 Atlas-Quaimers Mfg Co
41 Amer Can-Marsh Pump Co
42 Amer Can Standard Ind Co
43 Amer Can-Standard Ind Co
44 American Pump Div
45 American Water Southern Co
46 The Brier Co
47 The Laboratories, Inc
48 The Spruce Co
49 The Water Co

Account	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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- BP - Bingham Pump Co.
- CB - Chain Belt Co.
- CF - Clearance Felt Co.
- TC - Techrane Corp.
- EC - Ecos Engineering Corp.
- AT - Armstrong Turbine Bldg. Co.
- DM - Deane-Miller Div. Bingham Co.
- DB - Dean Brothers Pumps, Inc.
- DC - Deans Chemical Co.
- DL - Deland Steel Turbine Co.
- DP - Diamond Power Specialty Corp.

- EA - Electronics East of America
- EL - Electric Co.
- EN - Engineers, Nurses & Co.
- EX - The Exports Co.
- GE - General Electric Co.
- GI - Green River Geomixer Co. Inc.
- GW - Great Water Conditioning Co.
- HD - The Hays Corp.
- HCC - Hazard Chemicals & Controls, Inc.
- LC - Laboratories, Inc.
- LI - Iron-Preman Mfg. Co.

- IR - Ingersoll-Rand Co.
- IA - Illinois Water Treatment Co.
- JE - John Bean Div.
- JH - James Howden & Co. of Canada Ltd.
- JE - The J. J. Egan Co.
- LC - Leachman Co.
- EW - E. W. Waring Mfg. Co.
- AG - MacArthur Co.
- AL - Marathon Electric Mfg. Corp.
- MA - Minneapolis Air Conditioning Corporation Co.
- NA - National Air Filter Corp.

- OS - Orr & Seemower, Inc.
- PC - Pratt-Daniel Corp.
- PE - Peerless Pump Div., Food Machinery and Chemical Corp.
- PM - Permutit Co. Div. of Plauder-Hermitt, Inc.
- PF - Pacific Pumps, Inc.
- PG - Performance Pump & Compressor Co.
- PI - Precision Electric & Engineering
- PL - Republic Flow Meters Co.
- PO - Precision Gage Column Co.

- RR - Roy E Roth Co
- SW - Sturtevant Div, Westinghouse Electric Corp
- TC - Terry Steam Turbine Co
- UC - United Conveyor Corp
- WE - Westinghouse Electric Corp
- WEC - Wagner Electric Corp
- WR - Worthington Corp
- WPI - Warren Pumps Inc
- WS - Wilson-Snyder Works, U S Steel Corp

1960 design survey: typical industrial plants

Project Number	Company & Location	Consulting Engineers	Age of existing plant	Date of initial operation	Principal steam use	NEW BOILERS										NEW FURNACE EQUIPMENT		
						Number new boilers	Available fuel	Operating pressure, psig	Operating temperature, °F	Boiler type	Capacity, bbl. 1000 lb. per hr.	Boiler and natural surface, 1000 sq ft	Surface volume, 1000 cu ft	Furnace heat release, 1000 Btu per cu ft per hr.	Furnace type	Firing	Stoker type	Other equipment
1	American Standard, Trenton, N.J.		Ex	1930	SH	2	BW	150	540	WT	28	1.0	1.0	1.0	1.0	0	CG	
2	Armstrong-Hughes Co., Hudson, N.J.		New	1955	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
3	Bell State Teachers College, Muncie, Ind.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
4	Broadway-Helm, Inc., Springfield, Ill.	Arts, Baum & Bolles	New	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
5	Brown & Williamson Tobacco Corp., Louisville, Ky.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
6	Bullens Block & Stone Co., Roswell, N. Mex.	Barnhart & Dwyer Eng. Co.	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
7	Butler & Knight, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
8	Carroll Corp. of America, Thomasville, N.C.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
9	Champion Paper Products, Chattanooga, Mich.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
10	Chrysler Hospital, Chicago, Ill.	Foster & Miller	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
11	Continental Tire of America, Tacoma, Wash.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
12	Empire-Warner Steel Corp., Manchester, Ind.	Lincoln Energy Corp.	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
13	First State Lumber Co., Newark, Del.	P.D. Wayne	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
14	General American Trans. Corp., Sharon, Pa.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
15	Hunt Bros. & Sons, Inc., Savannah, Ga.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
16	Indiana University, Bloomington, Ind.	Tarbert & Lutz	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
17	McGraw-Hill, New York, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
18	New York University, Bronx, New York		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
19	Petroleum State Lumber, Warren, Pa.	Thompson	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
20	Rockwell Hospital, Trenton, N.J.	Marine Engineering Service Co.	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
21	Rohrer, Inc., New Brunswick, N.J.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
22	Rochester State Hospital, Rochester, N.Y.	N.Y.S. Dept. of Public Works	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
23	St. Lukes Hospital, Kansas City, Mo.	Ray, Kow	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
24	West Virginia University, Charleston, W. Va.	Burns & McDonnell	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
25	Woolworth Stores, Inc., Dallas, Tex.	Burns & McDonnell	Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
26	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
27	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
28	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
29	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
30	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
31	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
32	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
33	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
34	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
35	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
36	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
37	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
38	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
39	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
40	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
41	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
42	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
43	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
44	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
45	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
46	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
47	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
48	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
49	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
50	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
51	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
52	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
53	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
54	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
55	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
56	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
57	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
58	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
59	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
60	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
61	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
62	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
63	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
64	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
65	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
66	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
67	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
68	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
69	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
70	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
71	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
72	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
73	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
74	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
75	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
76	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
77	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
78	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
79	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
80	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
81	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
82	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11	1.0	1.0	1.0	1.0	0	CG	
83	Yonkers City, Yonkers, N.Y.		Ex	1930	SH	1	BW	150	540	WT	11							

[illegible]

Power

1960

OCTOBER

Central Station Design Survey

The following 11 pages carry tabulations of pertinent data on conventionally fueled and nuclear plants. Information listed for conventional steam plants is the most complete that can be had for units planned, under construction and starting operation. As in last October's survey, the design features listed for each project cover four tightly packed tabulated pages.

But, because of the way we must compile facts, the survey of conventional steam plants does not include *all* current programs, nor does it consist *only* of current plant construction.

This comes about since we are working from lists of planned installations as a base. Questionnaires asking for project details are sent to the individual companies on those lists. Data may appear in the tables well before construction starts; or if engineering is delayed, may appear long after announcement.

Being representative of design and construction in late 1959 and early 1960, the following tables give useful information on general trends. But you can readily see why they can't be complete. So just consider them as extensive samples and don't use them to get total values or where any degree of incompleteness would seriously distort results.



- BA - Bando & Wood Co
- CB - Chain Belt Co
- CE - Combustion Engineering Inc
- CFB - Ciferault Co
- CHW - CH Wheeler Mfg Co
- CIM - Clyde Iron Works
- COC - Cochrane Corp.
- CT - Caterpillar Tractor Co
- CV - Cores Vulcan Div. Bann-Knox Co
- DL - DeLaval Steam Turbine Co
- DP - Diamond Power Specialty Corp

- HL - Hall Laboratories
- HM - Hays Manufacturing Co
- HP - Hewitt-Roberts, Inc
- HR - Hewitt-Roberts, Inc
- HT - Hundertorf & Terry, Inc
- IB - Industrial Brownhoist Corp
- IE - Illinois Electronic Systems
- IN - Inflice, Inc
- IR - Ingersoll-Rand Co
- IW - Illinois Water Treatment Co
- KC - Koppers Co, Inc

- LAC - Louis-Allis Co
- LB - Link-Belt Co
- LA - Leeds & Northrup Co
- McK - McKiernan Terry Co
- McN - McNally Pittsburg
- MR - Milton Roy Co
- MS - Maryland Shipbuilding & Drydock Co
- ON - Onal Steel Inc
- PC - Pennsylvania Crusher
- PM - Permutt Co, Div
Paudler Permutt

Central-station installations TABLE 1 continued

[illegible]

TABLE 2

1960 design survey of typical

Compiled by: BGA Skrotzki, Associate Editor
and Althea Thornton

Project Number	Company	Location	Plant Name	Consulting Engineers	Unit No. (see unit)	First operational, new unit	Boiler pressure, psi	Steam temperature, °F		Efficiency, %
								High	Low	
18	Arizona Public Service Co.	Joseph City, Arizona	Cholla	Basco Services, Inc.	1	5-62	1300	1000	1000	12
19	Atlantic City Electric Co.	Beesleys Point, N.J.	Beesleys Point	Bechtel Corp.	1	11-62	1300	1000	1000	12
20	Boston Edison Co.	Everett, Mass.	Wystic	Jackson & Moreland Inc.	2	5-61	1300	1000	1000	1
21	Central Illinois Light Co.	Near Bartonville, Ill.	E.D. Edwards	Commonwealth Associates, Inc.	1	5-60	1300	1000	1000	1
22	Town of Davis Gas & Electric Co.	East Davenport, Iowa	Riverside	Sargent & Lundy	3	5-61	1300	1000	1000	1
23	Iowa Power & Light Co.	Tracy, Iowa	Tracy	Black & Veatch	1	12-64	1300	1000	1000	12
24	Iowa Public Service Co.	Near Sioux City, Iowa	Sioux City	Basco Services, Inc.	1	4-64	1300	1000	1000	1
25	Kansas Power & Light Co.	Decumson, Kan.	Decumson	Black & Veatch	9	4-62	1300	1000	1000	1
26	Louisville Gas & Electric Co.	Louisville, Ky.	Cane Run	Pioneer Service & Engrg Co.	4	4-62	1300	1000	1000	1
27	Monongahela Power Co.	Willow Island, W. Va.	Willow Island	Sanderson & Porter	2	10-60	1300	1000	1000	12
28	Southwestern Electric Power Co.	Norris County, Texas	Wilkes	Sargent & Lundy	1	4-63	1300	1000	1000	1
29	Utah Power & Light Co.	Kemmerer, Wyo.	Kemmerer	Bechtel Corp.	1	3-63	1300	1000	1000	1
30	Indianapolis Power & Light Co.	Indianapolis, Ind.	Elmer W. Stout	Gibbs & Hill, Inc.	2	6-61	1315	1000	1000	1
31	Columbus & Southern Ohio Electric Co.	Conesville, Ohio	Conesville	Black & Veatch	3	1962	1450	1000	1000	12
32	Interstate Power Co.	Sterburch, Minn.	Fox Lake	Sargent & Lundy	3	7-62	1450	1000	1000	1
33	Iowa Electric Light and Power Co.	Marshalltown, Iowa	Sutherland	Sargent & Lundy	3	5-61	1450	1000	1000	1
34	Public Power & Light Co.	Glenrock, Wyo.	Dave Johnston	Basco Services, Inc.	20	11-60	1450	1000	1000	12
35	Southwestern Public Service Co.	Amarillo, Texas	Nichols	Self	2	5-62	1450	1000	1000	12
36	Tucson Gas Electric Light & Power Co.	Tucson, Ariz.	Irvington	Sanderson & Porter	3	3-62	1450	1000	1000	12
37	Wisconsin Power & Light Co.	Cassville, Wis.	Nelson Dewey	Sargent & Lundy	2	12-62	1450	1000	1000	1
38	Southern Nevada Power Co.	East Las Vegas, Nev.	Clark	Stearns-Roger Mfg Co.	3	5-61	1250	950	950	1
39	Black Hills Power & Light Co.	Rapid City, S.D.	Ben French	Stearns-Roger Mfg Co.	1	11-60	850	400	400	12
40	Public Service Co. of Oklahoma	Okemah, Okla.	Okemah	Black & Veatch	3	11-60	275	400	400	1
41	Fan Pump Gas & Electric Co.	National City, Calif.	National City	Pioneer Svc & Engrg Co.	15	5-60	225	397	397	1
MUNICIPAL, FEDERAL AND CO-OPERATIVE INSTALLATIONS										
42	City of Jacksonville	Jacksonville, Fla.	Talleverand	Gibbs & Hill, Inc.	10	12-61	1890	1000	1000	12
43	San Antonio Public Service Board	San Antonio, Texas	W.B. Tuttle	Bechtel Corp.	1	5-61	1300	1000	1000	1
44	San River Power District	Phoenix, Ariz.	Acqua Fria	Bechtel Corp.	3	5-61	1300	1000	1000	1
45	Springfield City Utilities	Springfield, Mo.	James River	Burns & McDonnell Engrg Co.	32	4-60	1250	950	950	1
46	City of Colorado Springs	Colorado Springs, Colo.	South Steam Plant	Lutz & May	5	10-62	1250	950	950	1
47	Grand Rapids Water and Light Co.	Grand Rapids, Mich.	Moore Park	Bosny, Benjamin & Woodhouse, Inc.	1	5-61	1250	950	950	1
48	Indianapolis Public Works	Indianapolis, Ind.	James DeLong	Black & Veatch	4	6-61	915	400	400	1
49	City of Gainesville	Gainesville, Fla.	Daugherty	Daugherty & Goethe	1	6-61	915	400	400	1
50	Delaware Municipalities	Delaware, Ohio	Delaware	Beiswenger-Moore & Assoc.	3	5-60	900	400	400	1
51	Raton Public Service Co.	Raton, N. Mex.	Raton	Burns & McDonnell Engrg Co.	5	10-61	630	425	425	1
52	Grand Haven Water and Light Co.	Grand Haven, Mich.	Grand Haven	Lutz & May	10	5-61	900	425	425	1
53	Grand Haven Water and Light Co.	Grand Haven, Mich.	Grand Haven	Lutz & May	20	5-61	900	425	425	1
54	Winnepesaukee Water & Light Co.	Winnepesaukee, Wis.	Winnepesaukee	Winnepesaukee	1	5-61	1000	450	450	1
55	Winnepesaukee Water & Light Co.	Winnepesaukee, Wis.	Winnepesaukee	Sargent & Lundy	1	5-61	450	450	450	1
56	City of Breese	Breese, Ill.	Breese	Waters-Schmidt	1	5-60	110	110	110	1
57	City of Breese	Breese, Ill.	Breese	Waters-Schmidt	2	5-60	110	110	110	1
SYMBOLS USED ABOVE										
80	Balance plant	M	Motor	WS	Water supply	2	Tangential	AOS	A.O. Smith Corp.	
81	Gas bypass	MS	Motor coupling	1	24 gal./20 psi	10	Cyclone	AP	Alico Products, Inc.	
82	Steam to the boiler	N	No. motors per fan	2	Revised data, previous listed	11	1000 Btu per sq ft per hr	AS	American Standard	
83	Steam to the boiler	PS	Pressurized	3	Revised data, previous listed	12	Semi-outdoor unit	ASH	Allen-Sherman-Hoff Co.	
84	Steam to the boiler	PS	Pressurized	4	Revised data, previous listed	13	Million Btu per hr	BF	Buffalo Forge Co.	
85	Steam to the boiler	PS	Pressurized	5	Revised data, previous listed	14	Future 1250	BI	Beico Industrial Equip.	
86	Steam to the boiler	PS	Pressurized	6	Revised data, previous listed	15	Future heating boiler	BJ	Burns-Jackson Pump	
87	Steam to the boiler	PS	Pressurized	7	Revised data, previous listed	16	Future heating boiler	BU	Burns-Jackson Pump	
88	Steam to the boiler	PS	Pressurized	8	Revised data, previous listed	17	Future heating boiler	BU	Burns-Jackson Pump	
89	Steam to the boiler	PS	Pressurized	9	Revised data, previous listed	18	Future heating boiler	BU	Burns-Jackson Pump	
90	Steam to the boiler	PS	Pressurized	10	Revised data, previous listed	19	Future heating boiler	BU	Burns-Jackson Pump	
91	Steam to the boiler	PS	Pressurized	11	Revised data, previous listed	20	Future heating boiler	BU	Burns-Jackson Pump	
92	Steam to the boiler	PS	Pressurized	12	Revised data, previous listed	21	Future heating boiler	BU	Burns-Jackson Pump	
93	Steam to the boiler	PS	Pressurized	13	Revised data, previous listed	22	Future heating boiler	BU	Burns-Jackson Pump	
94	Steam to the boiler	PS	Pressurized	14	Revised data, previous listed	23	Future heating boiler	BU	Burns-Jackson Pump	
95	Steam to the boiler	PS	Pressurized	15	Revised data, previous listed	24	Future heating boiler	BU	Burns-Jackson Pump	
96	Steam to the boiler	PS	Pressurized	16	Revised data, previous listed	25	Future heating boiler	BU	Burns-Jackson Pump	
97	Steam to the boiler	PS	Pressurized	17	Revised data, previous listed	26	Future heating boiler	BU	Burns-Jackson Pump	
98	Steam to the boiler	PS	Pressurized	18	Revised data, previous listed	27	Future heating boiler	BU	Burns-Jackson Pump	
99	Steam to the boiler	PS	Pressurized	19	Revised data, previous listed	28	Future heating boiler	BU	Burns-Jackson Pump	
100	Steam to the boiler	PS	Pressurized	20	Revised data, previous listed	29	Future heating boiler	BU	Burns-Jackson Pump	
MANUFACTURERS										
AC	Atlas-Chalmers Mfg Co.									
AD	Allen & DuMont Laboratories, Inc.									
AE	Allen & DuMont Laboratories, Inc.									
AF	Allen & DuMont Laboratories, Inc.									
AG	Allen & DuMont Laboratories, Inc.									
AH	Allen & DuMont Laboratories, Inc.									
AI	Allen & DuMont Laboratories, Inc.									
AJ	Allen & DuMont Laboratories, Inc.									
AK	Allen & DuMont Laboratories, Inc.									
AL	Allen & DuMont Laboratories, Inc.									
AM	Allen & DuMont Laboratories, Inc.									
AN	Allen & DuMont Laboratories, Inc.									
AO	Allen & DuMont Laboratories, Inc.									
AP	Allen & DuMont Laboratories, Inc.									
AQ	Allen & DuMont Laboratories, Inc.									
AR	Allen & DuMont Laboratories, Inc.									
AS	Allen & DuMont Laboratories, Inc.									
AT	Allen & DuMont Laboratories, Inc.									
AU	Allen & DuMont Laboratories, Inc.									
AV	Allen & DuMont Laboratories, Inc.									
AW	Allen & DuMont Laboratories, Inc.									
AX	Allen & DuMont Laboratories, Inc.									
AY	Allen & DuMont Laboratories, Inc.									
AZ	Allen & DuMont Laboratories, Inc.									

New central-station installations

Project Number		General Data		Equipment		Performance		Efficiency		Reliability		Maintenance		Cost		Notes	
Project Number	General Data	Equipment	Performance	Efficiency	Reliability	Maintenance	Cost	Notes	Project Number	General Data	Equipment	Performance	Efficiency	Reliability	Maintenance	Cost	Notes
1000																	

- | | | | |
|---|---|--|---|
| EM - Electric Machinery Mfg. Co.
FE - Fairfield Engineering Co.
FW - Foster Wheeler Corp.
GE - General Electric Co.
GF - Green Fuel Economizer Co. Inc.
GP - Grison-Russell Co.
GW - Gravel Water Conditioning Co.
HCC - Hagan Chemicals & Controls, Inc.
HL - Hall Laboratories
HR - Hewitt-Robins Inc.
IR - Industrial Brownhoist Corp. | IN - Infirco Inc.
IR - Ingersoll-Rand Co.
IW - Illinois Water Treatment Co.
JW - Jeffrey Mfg. Co.
KW - Keweenaw Mfg. Co.
KC - Koopers Co.
LAC - Louis Aulis Co.
LB - Link-Bell Co.
LA - Leeds & Northrup Co.
LS - Laclede Stoker Co. | MCN - McNary Pittsburg
AL - Manning & Lewis Engine Co.
MS - Maryland Shipbuilding & Drydock Co.
NA - National Aluminate Corp.
PC - Planet Corp.
PM - Permutit Co. Div. Plauder-Fermuit
PP - Pacific Pumps, Inc.
RC - Research-Cottrell, Inc.
RCA - Radio Corporation of America
RE - Republic Flow Meters Co. | RHE - Ross Heat Exchanger Div.
RU - Robbins & Meyers, Inc.
RS - Riley Stoker Corp.
SA - Stephens-Adamson Mfg. Co.
SW - Sturtevant Div., Westinghouse Electric Corp.
UC - United Conveyor Corp.
WE - Westinghouse Electric Corp.
WO - Worthington Corp.
WP - Western Precipitation Corp.
YU - Yuba Heat Transfer Div. |
|---|---|--|---|

Central-station installations TABLE 2 continued

Project Number	BOILER FEED PUMPS										FUELS										FIRING										ASH HANDLING									
	Capacity (cu ft/hr)	Discharge pressure (psig)	Admixture	Flow control	Drive	Drive type	Drive mechanism	Feed type	Heating value (Btu per lb)	Asphalt content (wt %)	Fuel delivery method	Coal unloading system	Unloading system manual labor	Handling system to storage	Handling system manual labor	Coal firing equipment	Firing equipment manual labor	No pulverizers per boiler	Asphalt handling system	Asphalt handling system manual labor	Soot blower type	Soot blowing medium	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor	Soot blower manual labor				
48	1010	2210	AC	2	2M	1750	EL	C	11.1	...	RR	OS	Co Bu	FE	...	CE	4	...	...	...	Ro Ret	Air	DP	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
49	1250	2450	AC	2	2M	2000	GE	C	11.1	2250	RR	OS	SA FE	Co Bu	FE	...	CE	4	...	...	Ro Ret	Air	DP	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
50	1340	2320	AC	2	2M	2000	WE	C	13.5	2200	RR	OS	HR	Co Bu	SA	...	CE	4	...	...	Sta Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...	...				
51	2540	2241	AC	2	2M	1000	GE	C	10.5	1900	RR Tr	OS	HR	Co Bu	LB	...	CE	4	...	...	Ret	Air	DP	...	...	...	...	...	...	...	...	...	...	...	...	...				
52	190	1160	AC	2	2M	1750	GE	C	12.4	2000	RR Tr	OS	FE	Co Bu	FE	...	CE	4	...	...	Ret	Air	DP	...	...	...	...	...	...	...	...	...	...	...	...	...				
53	...	...	...	2	2M	...	...	C	12.5	2000	RR Tr	OS	...	Co Bu	...	...	CE	4	...	...	Ret	Air	DP	...	...	...	...	...	...	...	...	...	...	...	...	...				
54	...	...	...	2	2M	1500	GE	C	12.5	2000	RR	OS	...	Co Bu	...	...	CE	4	...	...	Ret	Air	DP	...	...	...	...	...	...	...	...	...	...	...	...	...				
55	...	...	...	2	2M	1500	GE	C	12.5	2000	RR	OS	...	Co Bu	...	...	CE	4	...	...	Ret	Air	DP	...	...	...	...	...	...	...	...	...	...	...	...	...				
56	500	2190	AC	2	2M	2500	AC	C	11.8	1900 ²²	RR	OS	HR	Co Bu	HR	...	CE	4	...	...	Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...					
57	274	2300 ²⁴	AC	2	2M	2250	GE	C	11.2	2450	Ba RR	OS, CI	CIW	Co Bu	LB HR	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...					
58	1300	2230	AC	2	2M	2500	EL	C	10.818	...	Tr	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...					
59	...	...	...	2	2M	...	...	C	9.5	2140	Co	...	...	Co Bu	...	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...					
60	675	1730	AC	2	2M	1250	WE	C	11.0	1950	RR	OS	RO	Co Bu	LB	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...					
61	...	...	...	2	2M	...	...	C	11.4	2125	Ba	...	...	Co Sc	FE	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...					
62	...	...	...	2	2M	...	...	C	11.018	...	Tr	...	...	Co	HR	...	CE	4	...	...	Ro	St	DP	...	...	...	...	...	...	...	...	...	...	...	...					
63	...	...	...	2	2M	...	...	C	11.3	2200	RR Tr	OS	HR	Co Bu Sc	LB	...	CE	4	...	...	Ro Ret	St	DP	...	...	...	...	...	...	...	...	...	...	...	...					
64	1354	2400	AC	2	2M	2250	GE	C	11.3	2200	Tr	...	...	Co Bu Sc	MCN	...	CE	4	...	...	Ret	Air	DP	...	...	...	...	...	...	...	...	...	...	...	...	...				
65	1368	2390	AC	2	2M	2250	AC	C	10.0018	...	Tr	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...					
66	...	...	...	2	2M	...	...	C	10.818	...	Tr	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
67	...	...	...	2	2M	...	...	C	11.4	2125	Ba	...	...	Co Sc	FE	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...					
68	...	...	...	2	2M	...	...	C	11.0018	...	Tr	...	...	Co	HR	...	CE	4	...	...	Ro	St	DP	...	...	...	...	...	...	...	...	...	...	...	...					
69	...	...	...	2	2M	...	...	C	...	...	RR	OS	...	Co	HR	...	CE	4	...	...	Ro	St	DP	...	...	...	...	...	...	...	...	...	...	...	...					
70	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...					
71	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...					
72	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...					
73	1620	2700	AC	2	2M	2000	WE	C	13.0	...	Ba	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...					
74	1620	2700	AC	2	2M	2000	WE	C	13.0	...	Ba	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...					
75	500	2190	AC	2	2M	2500	AC	C	11.8	1900 ²²	RR	OS	HR	Co Bu Sc	LB	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...					
76	500	2190	AC	2	2M	2500	AC	C	11.8	1900 ²²	RR	OS	HR	Co Bu Sc	LB	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...					
77	500	2190	AC	2	2M	2500	AC	C	11.8	1900 ²²	RR	OS	HR	Co Bu Sc	LB	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...	...				
78	500	2190	AC	2	2M	2500	AC	C	11.8	1900 ²²	RR	OS	HR	Co Bu Sc	LB	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...	...				
79	500	2190	AC	2	2M	2500	AC	C	11.8	1900 ²²	RR	OS	HR	Co Bu Sc	LB	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...	...				
80	500	2190	AC	2	2M	2500	AC	C	11.8	1900 ²²	RR	OS	HR	Co Bu Sc	LB	...	CE	4	...	...	Ro Ret	St	CV	...	...	...	...	...	...	...	...	...	...	...	...	...				
81	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
82	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
83	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
84	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
85	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
86	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
87	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
88	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
89	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
90	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
91	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
92	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
93	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
94	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
95	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
96	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
97	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
98	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
99	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
100	...	...	...	2	2M	...	...	C	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				

SYMBOLS USED ABOVE

Ad - Admiralty
AdB - Admiralty Brass
AdC - Admiralty Corrosion
AdG - Admiralty Gunmetal
AdH - Admiralty High
AdI - Admiralty Intermediate
AdJ - Admiralty Jacket
AdK - Admiralty Keel
AdL - Admiralty Locomotive
AdM - Admiralty Main
AdN - Admiralty Naval
AdO - Admiralty Oil
AdP - Admiralty Paint
AdQ - Admiralty Quench
AdR - Admiralty Rust
AdS - Admiralty Steel
AdT - Admiralty Tin
AdU - Admiralty Unalloyed
AdV - Admiralty Valve
AdW - Admiralty Weld
AdX - Admiralty X-ray
AdY - Admiralty Yarn
AdZ - Admiralty Zinc

CR - Crane
CS - Car shaker
C.S. - Coal sub-bituminous
CSU - Cargo self unloader
CZ - Coal zone
DE - Demolition
DUM - Dumpster
E - Electric
F - Fuel
G - Gas
H - Hot
I - Insulation
J - Jacket
K - Keel
L - Locomotive
M - Main
N - Naval
O - Oil
P - Paint
Q - Quench
R - Rust
S - Steel
T - Tin
U - Unalloyed
V - Valve
W - Weld
X - X-ray
Y - Yarn
Z - Zinc

HOP - Dump hopper
HOT - Condenser hotwell
HY - Hydraulic coupling
HVO - Hydraulic
L - Locomotive
LI - Liquid
M - Motor drive
ME - Mechanical
MP - Two motors per fan
N - None
O - Oil
P - Pulverizer
PAG - Photosensitized Admiralty

PI - Pipeline
PN - Pneumatic
R - Regulator
RET - Retractable
RO - Rotary pump or blower
RR - Railroad
S - Speed control
SC - Single cylinder
SC - Scraper
SO - Sifter
SS - Spreader stoker
ST - Steam
STA - Stationary
T - Turbine drive

TA - Tanker
TC - Tandem Comp
TG - Traveling crane
TH - Truck hopper
TR - Truck
UF - Underfeed stoker
V - Off-on with valve
W - At 0.5 lb/hr
X - Blower
Y - Of existing plant
Z - Manipulate
AA - Preferred stoker
BB - Softening lance
CC - Double flow
DD - Differential pressure

